

highlights the possible need for standardized postdischarge outpatient follow-up to decrease the risk of early readmission. Fourth, there was a small reduction of 30-day readmission rate after PE in the recent years.

We recognize several limitations which are inherent to an administrative database. The NRD lacks clinical data to assess risk severity and poses a risk of miscoding and under-coding. In particular, we are not able to differentiate between patients with low and intermediate-risk of PE and cannot quantify PE burden. Additionally, we cannot account for out-of-hospital mortality through NRD which may lead to possible under-estimation for post-PE readmission rates.

In conclusion, in patients who were hospitalized for PE with a history of HF, 30-day all-cause hospitalization rate increased after the index PE hospitalization versus before. This finding is more pronounced in patients with HFrEF as compared to HFpEF.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relations that could have appeared to influence the work reported in this study.

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1. Virani SS, Alonso A, Benjamin EJ, Bittencourt MS, Callaway CW, Carson AP, Chamberlain AM, Chang AR, Cheng S, Delling FN, Djousse L, Elkind MSV, Ferguson JF, Fornage M, Khan SS, Kissela BM, Knutson KL, Kwan TW, Lackland DT, Lewis TT, Lichtman JH, Longenecker CT, Loop MS, Lutsey PL, Martin SS,

Matsushita K, Moran AE, Mussolino ME, Perak AM, Rosamond WD, Roth GA, Sampson UKA, Satou GM, Schroeder EB, Shah SH, Shay CM, Spartano NL, Stokes A, Tirschwell DL, VanWagner LB, Tsao CW, Wong SS, Heard DG. Heart disease and stroke statistics—2020 update: a report from the American Heart Association. *Circulation*. 141e139–e596. <https://doi.org/10.1161/CIR.0000000000000757>.

2. Darze ES, Latado AL, Guimarães AG, Guedes RAV, Santos AB, De Moura SS, Passos LCS. Acute pulmonary embolism is an independent predictor of adverse events in severe decompensated heart failure patients. *Chest*. 1311838–1843. <https://doi.org/10.1378/chest.06-2077>.

3. Ne JYA, Chow V, Kritharides L, Ng ACC. Predictors for congestive heart failure hospitalization or death following acute pulmonary embolism: a population-linkage study. *Int J Cardiol*. 278162–166. Available from: <https://doi.org/10.1016/j.ijcard.2018.12.063>.

4. Secemsky EA, Rosenfield K, Kennedy KF, Jaff M, Yeh RW. High burden of 30-day readmissions after acute venous thromboembolism in the United States. *J Am Heart Assoc*. 7: e009047. <https://doi.org/10.1161/JAHA.118.009047>.

5. Nationwide Readmission Database (NRD). *Healthcare Cost and Utilization Project (HCUP)*. Rockville, MD: Agency for Healthcare Research and Quality, Rockville, MD; 2012 <https://www.hcup-us.ahrq.gov/nrdoverview.jsp>.

<https://doi.org/10.1016/j.amjcard.2020.09.005>

Meta-Analysis of Aspirin Monotherapy Versus Dual Antiplatelet Therapy After Transcatheter Aortic Valve Implantation



Transcatheter Aortic Valve Implantation (TAVI) is increasingly being performed in patients with severe aortic stenosis.¹ The current American guidelines recommend dual antiplatelet therapy (DAPT) for the first 3 to 6 months after TAVI in patients who are not on anticoagulation.¹ These recommendations have been established based on experts' opinions due to the lack of clinical trials investigating the optimal antithrombotic therapy in this population. More recently, multiple studies have questioned the benefit of DAPT in reducing thromboembolic outcomes and revealed high bleeding events in patients who received DAPT after TAVI compared with aspirin monotherapy.^{2–5} Therefore, we conducted a meta-analysis of all randomized

controlled trials (RCTs) to assess the safety and efficacy of DAPT versus aspirin monotherapy after TAVI.

We performed a comprehensive electronic databases search for RCTs. Two authors extracted and analyzed the data using STATA v15.1 software. The outcomes of interest were all-cause mortality, stroke, and clinically significant bleeding (defined as valve academic research consortium major, life-threatening or disabling bleeding). We calculated hazard ratios (HRs) and 95% confidence intervals (CIs) to account for differences in follow-up duration using a random-effect model. We also calculated the number need to treat for the clinically significant outcomes.

We identified 4 RCTs^{2–5} with 1,086 patients, mean duration of follow up (7 ± 4 months) (age 80 ± 1 years; females 44%), randomizing 9,845 patient-months of follow-up. Compared with DAPT, aspirin monotherapy was associated with a significant reduction of clinically significant bleeding (HR 0.49, 95% CI 0.32 to 0.75, p=0.001, number need to treat = 19) (Figure). There was no difference between aspirin monotherapy and DAPT in terms of all-cause mortality (HR 1.00, 95% CI 0.62 to 1.62, p=1.00) and stroke (HR 1.05, 95% CI 0.58 to 1.90, p=0.87) (Figure).

In conclusion, in patients with severe aortic stenosis who underwent TAVI, an antithrombotic strategy using aspirin monotherapy has reduced the risk of clinically significant bleeding by 50% with no difference in all-cause mortality and stroke compared with DAPT.

Disclosure

None.

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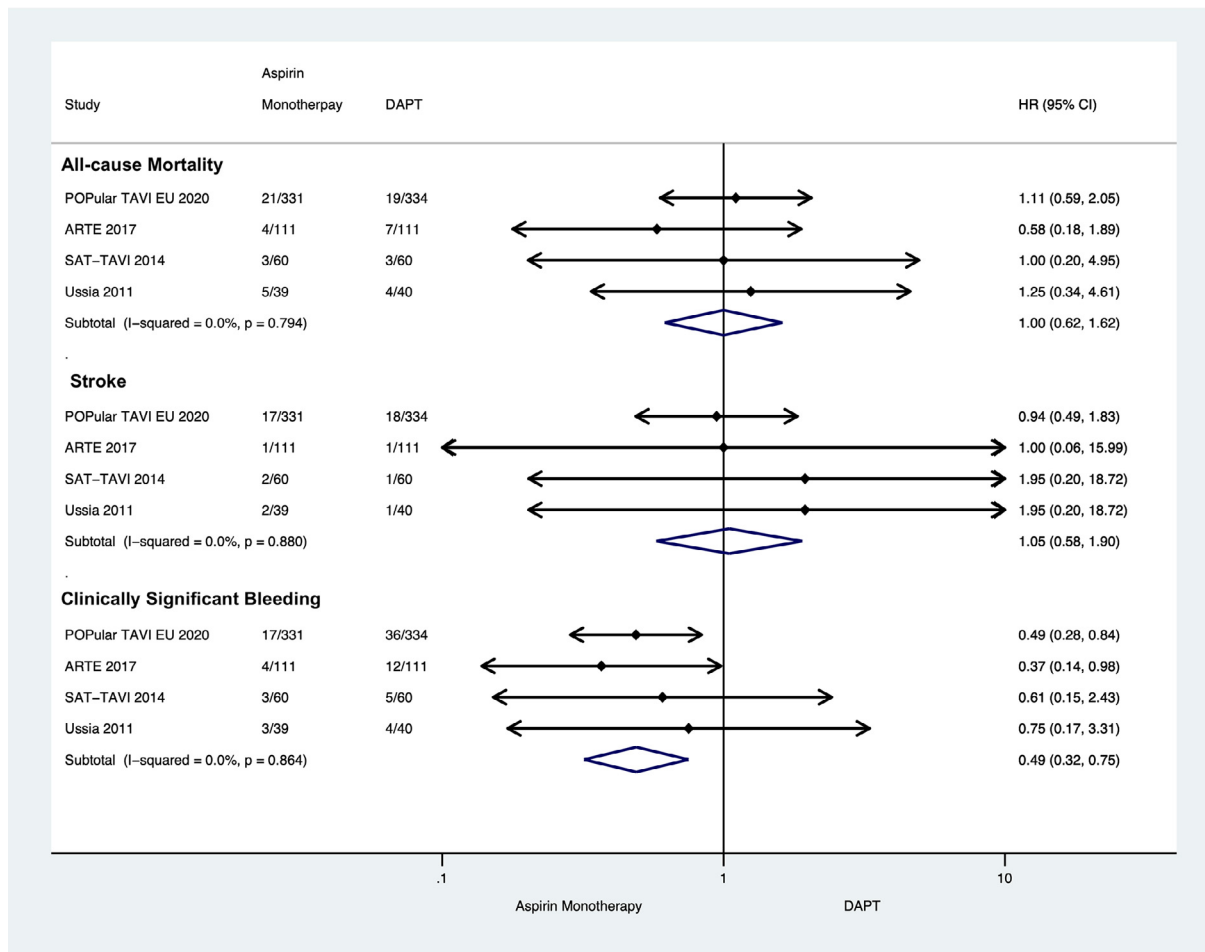


Figure. Forest plot summarizing the main findings from the meta-analysis.

- Otto CM, Kumbhani DJ, Alexander KP, Calhoun JH, Desai MY, Kaul S, Lee JC, Ruiz CE, Vassileva CM. 2017 ACC expert consensus decision pathway for transcatheter aortic valve replacement in the management of adults with aortic stenosis. *J Am Coll Cardiol.* 69 1313–1346.
- Brouwer J, Nijenhuis VJ, Delewi R, Hermannides RS, Holvoet W, Dubois CLF, Frambach P, De Bruyne B, van Houwelingen GK, Van Der Heyden JAS, Toušek P, van der Kley F, Buyschaert I, Schotborgh CE, Ferdinande B, van der Harst P, Roosen J, Peper J, Thielen FWF, Veenstra L, Chan Pin Yin DRPP, Swaans MJ, Rensing BJWM, van 't Hof AWJ, Timmers L, Kelder JC, Stella PR, Baan J, ten Berg JM. Aspirin with or without clopidogrel after transcatheter aortic-valve implantation. [published online ahead of print, 2020 Aug 30]. *N Engl J Med.* . <https://doi.org/10.1056/NEJMoa2017815>. 10.1056/NEJMoa2017815.
- Cardiology ACo. SAT-TAVI (Single Antiplatelet Therapy for TAVI) study: a randomized study comparing double to single antiplatelet therapy for transcatheter aortic valve implantation. *J Am Coll Cardiol.* 58B218.
- Rodés-Cabau J, Masson J-B, Welsh RC, del Blanco BG, Pelletier M, Webb JG, Al-Qoofi F, Génereux P, Maluenda G, Thoenes M. Aspirin versus aspirin plus clopidogrel as antithrombotic treatment following transcatheter aortic valve replacement with a balloon-expandable valve: the ARTE (Aspirin Versus Aspirin+ Clopidogrel Following Transcatheter Aortic Valve Implantation) randomized clinical trial. *JACC: Cardiovasc Interv.* 101357–1365.
- Ussia GP, Scarabelli M, Mulè M, Barbanti M, Sarkar K, Cammalleri V, Immè S, Aruta P, Pistrutto AM, Gulino S. Dual antiplatelet therapy versus aspirin alone in patients undergoing transcatheter aortic valve implantation. *Am J Cardiol.* 1081772–1776. <https://doi.org/10.1016/j.amjcard.2020.09.024>